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Collectanea Botanica (Barcelona)
vol. **29** (2010): 91-93
ISSN: 0010-0730
doi: 10.3989/collectbot.2010.v29.008

Three recently-introduced alien grasses in the Iberian Peninsula

S. PYKE

Jardí Botànic de Barcelona (ICUB), Psg. del Migdia s/n., 08038 Barcelona, Spain

E-mail: spyke@ibb.csic.es

Received 21 October 2010; Accepted 10 November 2010

Abstract

Three non-native grasses (Gramineae/Poaceae): *Bothriochloa barbinodis*, *Bothriochloa laguroides* subsp. *torreyana* and *Agropyron desertorum*, apparently hitherto unrecorded, have been detected in the Iberian Peninsula in recent years, and a further species, *Nassella neesiana*, is recorded as increasing its known distribution area in Catalonia (NE Spain).

Key words: *Agropyron*; alien; *Bothriochloa*; grass; Iberian Peninsula; *Nassella*.

Resumen

Tres gramíneas alóctonas nuevas para la península Ibérica.- *Bothriochloa barbinodis*, *Bothriochloa laguroides* subsp. *torreyana* y *Agropyron desertorum*, sin citas previas conocidas, han sido detectadas en la península Ibérica recientemente, y otra especie, *Nassella neesiana*, amplía su área de distribución en Cataluña (NE España).

Palabras clave: *Agropyron*; alóctona; *Bothriochloa*; gramínea; *Nassella*; península Ibérica.

Bothriochloa barbinodis (Lag.) Herter

Hs, (Barcelona) La Roca del Vallès, Can Messeguer, road verges, DG4507, 150 m, 24.07.2009, S. Pyke 6029 (BC 874222).

Bothriochloa is a taxonomically complex genus. It is not surprising therefore that the identity of its representatives in Europe remained unclear until recently. The presence of *B. barbinodis* in Europe, for instance, was finally confirmed by Lambinon (1995). This plant, whose basionym is *Andropogon barbinodis* Lag., later reduced to varietal level by Hackel –*A. saccharoides* Sw. var. *barbinodis*–, was erroneously referred to as *Bothriochloa imperatoides* (Hack.) Herter (Auriault, 1975) and *Dichanthium saccharoides* (Sw.) Roberty (Kerguelen, 1993), both being very similar. It is a

native of the New World (Argentina northwards as far as the southern United States) and in Europe has been detected in the south of France, where it is fast spreading to the north at present.

This recent observation, made in the fast-developing Vallès Oriental area quite close to Barcelona, resulted in fresh material being gathered, which was studied with the help of the recent contributions of Jacques Lambinon and Filip Verloove (Verloove & Lambinon, 2008). This population may have arrived from the Hérault (France) by means of rail or road transport. Due to the complexity of the *B. saccharoides* group of species, it is placed here as *B. barbinodis* pending confirmation by an expert in the group at a worldwide level.

It can be separated from the other *Bothriochloa* species (*Dichanthium* in some floras) known at

present in the Iberian Peninsula by the following characteristics:

From *B. ischaemum* (L.) Keng it is easily distinguished by its stouter, taller culms with clearly bearded nodes, the presence of a central axis 50-90 mm long in the inflorescence, and by its longer awns: (15)18-25(30) mm, as opposed to (8)10-15(17) mm in *B. ischaemum*.

From *B. bladhii* (Retz.) S. T. Lake it differs in its whitish densely soft-hairy inflorescence (silvery-red or purple and scarcely pilose in *B. bladhii*) and its longer awns (those of *B. bladhii* and *B. ischaemum* being about the same length).

From *B. insculpta* (Hochst. ex A. Rich.) A. Camus, it can be separated by its tall, erect growth habit (*B. insculpta* tends to be prostrate to ascending, and of a more straggly appearance), the bearded nodes (best seen on fresh material), its longer central axis (0-30 mm long in *B. insculpta*), and the longer (4.3-7.3 mm) sessile spikelets, these being the fertile ones.

The sterile (pedicellate) spikelets are shorter than the fertile ones in *B. barbinodis* and its close relatives, but in *B. insculpta*, *B. ischaemum* and *B. bladhii* they are of equal length or longer.

For comparison with other closely related species which might enter the Iberian Peninsula, see Verloove & Lambinon (2008), and also Vega (2000). Other species in the *B. saccharoides* complex also possess barbed nodes; an identification on this sole character could turn out to be unreliable.

***B. laguroides* (DC.) Herter subsp. *torreyana* (Steud.) Allred & Gould**

Hs, (Madrid) Torrejón de Ardoz, near the entrance to the air force base (Base Aerea), dry banks and disturbed ground, 12.10.1994 (S. Pyke, pers. obs.); Hs, (Madrid) Torrejón de Ardoz, near the entrance to the air force base (Base Aerea), dry banks and disturbed ground, 04.08.1997, *S. Pyke s. n.* (BC 874224).

Another taxon in this closely-related group (easily confused with *B. barbinodis* and its relatives of the *saccharoides* complex). The species is known to occur in south-east France and Italy (Verloove & Lambinon, 2008), and is native to southern North America and sub-tropical South America. Subsp. *torreyana* is basically a North American plant, whereas subsp. *laguroides* is more widely distributed.

The presence of this plant in Torrejón could possibly be explained by the use of this air base by the United States Air Force for many years during the latter half of the twentieth century. It is particularly common in the drier parts of the interior of the southern States, including Texas, and northern Mexico.

The population was first detected in 1994, and appeared to be well established on revisiting the site in 1997. Due to uncertainties as to its identity, it was left unresolved until the discovery of *B. barbinodis*, which differs from its sister species principally in its more robust habit, its clearly bearded nodes (with hairs 1-4 mm long), and the sessile spikelets, which are approximately 4.5 mm long (*ca.* 3 mm in *B. laguroides*).

***Agropyron desertorum* (Fisch. ex Link) Schult.**

Hs, (Zaragoza) Zaragoza, San Juan de Mozarrifar, uncultivated ground near Ciudad de Transporte, XM7820, 240 m, 10.08.2010, *S. Pyke 6420* (BC 874223).

This useful arid-region forage grass has probably made its appearance in Aragón, in the heart of the Ebro Valley, due to the sowing of road and railway embankments in recent years.

With a rapidly-expanding transport network the arrival of a non-native and extra-regional flora is inevitable. This species in particular, though apparently rare at present, could well establish itself in the area since its natural range and habitat coincide with conditions in the Ebro depression, and its preference for clay soils means that it should find the local clay “margas” perfectly suitable.

As for the identity of the plant encountered, we need to be aware that this group, within Nevski's section *Eu-Agropyrum* (Roshevitz & Shishkin, 1963), consists of several taxa which some authors lump, *e.g.*, Nevski (1934), and others accept as good taxa, *e.g.*, Roshevitz & Shishkin (1963), a common occurrence with conflictive or critical taxa. Nevski himself, in a note distributed with herbarium sheets of *Agropyron fragile* (Roth) Nevski (BC83751), admitted that the separation of *A. fragile* (into which he had sunk *A. sibiricum* (Willd.) P. Beauv.) from *A. desertorum* was *très compliquée*. Synonyms of *A. desertorum* relate it particularly to *A. sibiricum*: *A. sibiricum* var. *desertorum* (Fisch. & Link) Boiss.;

Eremopyrum sibiricum (Willd.) P. Cand. var. *desertorum* (Fisch. & Link) P. Cand. (Wu *et al.*, 2006).

The collected specimen can be placed satisfactorily within the present-day limits of *A. desertorum*. However, the much-reduced awns, lemmas that are slightly larger than usually stated for the species (6-7 mm as opposed to 5-6 mm) and glumes with short awns up to 2 mm long rather tend towards *A. fragile-A. sibiricum* when using traditional keys. On the other hand, the specimen agrees with *A. desertorum* in leaf width (less than 3 mm), glume shape, and spike dimensions, and the clay soil where it was found growing agrees with its stated soil requirements (the other species grow on sandy ground).

Roshevitz, according to Nevski's herbarium note, described a plant he provisionally named *Agropyron desertorum* var. *muticum*, which logically could be our plant, but I have not seen the type, and Nevski preferred to include this taxon within the synonymy of his *Agropyron fragile* complex. In my opinion, the presence or absence of awns should not be given too much importance, because there is a lot of variation in closely related genera like *Elymus* L., *Thinopyrum* Löve, etc., and breeding for agricultural purposes can easily affect such a character.

Agropyron desertorum is a Eurasian grass (W and C Asia, E Europe) known to be used in seed mixtures for revegetation of disturbed ground such as mining exploitations, rail and road verges, etcetera, and it shares this purpose with another species, *Agropyron pectiniforme* Roem. & Schult., which has also been introduced into the country. For notes on this and our native *Agropyron imbricatum* Roem. & Schult. (*A. cristatum* subsp. *pectinatum* auct. pl. hisp.), a gypsum-loving species, see Pyke (2008). For these two grasses, the specific level appears to be justified and is here proposed.

***Nassella neesiana* (Trin. & Rupr.) Barkw.**

Hs, (Barcelona) Barcelona, Montjuïc, NE slope in shade of *Pinus halepensis* and *Rhamnus alaternus*, DF3079, 120 m, 27.05.2010, S. Pyke 6101 & A. Escuredo (BC874221).

A further record of this plant, this time from the province of Barcelona and within the capital, is

here made and, to my knowledge, this record extends the known localities of this hitherto confused taxon towards the south of Catalonia. The population recorded here is well established and appears to have occupied this site for many years, but only a recent detailed survey of the vegetation of Montjuïc carried out by staff of Barcelona's Institut Botànic at the petition of the city council helped us come up with this surprising find. The grass is not easy to detect except at anthesis.

The earliest known record of the species in Catalonia (from Santa Pau, Girona, BC606450) dates back to 1971. Apart from the other records from the province of Girona (Verloove, 2005), this alien species has also been recorded from Coimbra (Portugal) and Madrid under the names *Stipa setigera* and *Nassella mucronata* (see Verloove, 2005). Outside the Iberian Peninsula, it is present in southern France, Corsica, Macaronesia, Italy, South Africa and Australia. It is native to South America.

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